V. *An Account of ſome Experiments made with the Bile of Perſons dead of the Plague at* Marſeilles, *with what appear'd upon the Diſſection of the Bodies; as likewiſe ſome Experiments made with the Bile of Perſons dead of other Diſeaſes. By the Learned and Curious Dr.* Deidier, *Profeſſor of Phyſick in the Faculty of* Montpellier. *Communicated by* John Woodward, M D. Prof. Med. Greſh. *and* R. S. S.

Experiments made upon the Bile of Perſons dead of the Plague.

Experiment I.

THE Human Bile, taken from the Gall-Bladder of the Bodies of thoſe that dy'd of the Plague at *Marſeilles*, has been always found to be of a black and greeniſh Colour. It has become conſtantly of a laſting Graſs Green upon the mixing of Spirit of Vitriol with it; and always very yellow when we mixt Oil of Tartar *per deliquium*, or the Alcalous fixt Salt of the ſame diſſolv'd in a ſufficient Quantity of Water. Theſe two Colours, green, and yellow, have continued for whole Months. The ſaid Bile has become of a black Colour, like Ink, but ſoon fading, by the Affuſion of Spirit of Nitr

Experiment II.

The Bile, taken from the Gall-Bladder of the Bodies of thoſe that dy'd of the Plague, having been pour'd

pour'd into a Wound made on purpoſe in different Dogs, has render'd them thereupon melancholy, drowzy, and without caring to eat. All theſe Animals dy'd in three or four Days with the eſſential Marks of the true Plague, declared by Buboes, Carbuncles, and gangrenous Inflammations in the *Viſcera*, in the ſame manner as in the human Carcaſſes from whence the Bile was taken.

Experiment III.

A Drachm of the ſaid peſtiferous Bile having been mix'd with two Ounces of Fountain Water made lukewarm, and injected into the Jugular Vein of ſeveral Dogs, has render'd them preſently drowzy, and has kill'd them in four Hours, with gangrenous Inflammations, the Heart ſtuffed full of black thick Blood, the Liver ſwell'd, and the Gall Bladder full of green Bile.

Experiment IV.

The ſame Quantity of Bile, injected by the Crural Vein, has produc'd in the Dogs a Heavineſs in about an Hour. They have had ſuch a ſtrong loathing of their Food, that they would not eat or drink the leaſt matter after the Injection was made. They piſs'd frequently, eſpecially if they were ſtirr'd. On the third Day there appear'd conſiderable Tumors under the *Axilla*, and on their Thighs, about 3 Inches from the Wound. The Wound turn'd to a Gangrene, and the Creature uſually dy'd on the fourth Day, with all the Marks of the Plague.

Experiment V.

A Dog, of the Hoſpital at the *Mail*, in *Marſeilles*, who follow'd the Surgeons when they went to dreſs the Sick, uſed greedily to ſwallow the corrupted Glands, and the Dreſſings charged with Pus that they took off the Plague-Sores; he lick'd up the Blood that he found ſpilt on the Ground in the Infirmary; and this he did for about three Months, and was always well, gay, brisk, full of Play, and familiar with all Comers. We injected into the right crural Vein of this Dog about a Drachm of the peſtiferous Bile, mix'd with two Ounces of warm Water. He dy'd the fourth Day, as the others did, with a Bubo on the wounded Thigh; on which likewiſe there were two Carbuncles, and the Wound gangren'd. What we took particular Notice of in this Dog was, that after the Injection, both when he was living, and after he was open'd, when dead, he had a very ſtinking Smell, which we did not obſerve in any of the others. He had moreover a conſiderable Hæmorrhage from the Wound, the Night before he dy'd, having ſtruggled hard to eſcape out of his Confinement.

Experiment VI.

The 2d of *May* having injected about a Drachm of humane Bile, taken from Perſons dead of the Plague, mix'd with two Ounces of warm Water, into the Crural Vein of a Dog, the Creature was preſently drowzy, refus'd his Food, and dyed about the third or fourth Day after the Injection, with all the inward and outward Marks of the Plague that the others had.

Expe-

Experiment VII.

The ſixth of the ſame Month we collected the Bile of this Dog dead of the Plague, and injected it by the Crural Vein into the Blood of another Dog, who, preſently after the Injection, had Convulſive Motions all over him, which were follow'd by a Lethargick Heavineſs. On the ſecond Day after the Injection, there appear'd a Carbuncle upon the great Pectoral Muſcle on the right ſide The third Day there aroſe a conſiderable Bubo on the Thigh; and the Dog dy'd the ſame Day. Upon opening the Body, we found the fore part of the Breaſt all gangren'd under the Teguments; and, in the inward parts, the *Viſcera* were full of black clotted Blood; as in all the reſt. The outward Surface of the Lungs was all Purple; The Heart was ſwelled as big again as uſual, with the four Cavities full of black clotted Blood. The Creature had liv'd three Days from the Injection without eating or drinking.

The 10th of *May* we injected the Bile of this ſecond Dog into the Crural Vein of a third Dog, who was thereupon ſeiz'd with violent Convulſions, and different convulſive Motions, for about half a quarter of an Hour. When he was recover'd from theſe, he appear'd dull, and ſleepy; he vomited with violent Strainings. The Vomiting was followed with a Hick-up. He eat a little boiled Meat, having faſted a good while before the Injection was made; but he vomited it up two Hours after he had taken it. He died the third Day with th e ſame Symptoms of the Plague that the other Dogs had.

The State of the Bodies of Perſons dead of the Plague, from which we took the Bile for the Experiments beforemention'd.

The firſt Body.

ONE *Belefleur*, a Soldier, of 25 Years of Age, of a ſtrong robuſt Conſtitution, having a flattiſh Bubo growing on the hollow of the right Groin, dy'd delirous. We found in his Carcaſs the Heart of an extraordinary Bigneſs, ſtuffed with black clotted Blood. His Lungs covered with a livid Purple, and ſticking a little to the *Pleura*. The Liver was double the natural Bigneſs, and ſtuffed with a thick Blood. The Gall Bladder was full of a black and greeniſh Bile. The *Dura* and *Pia Mater* by their Blackneſs ſeem'd to have been ſeized with a gangrenous Inflammation. The inward Subſtance of the Brain was ſprinkled over with an infinite number of ſmall livid Spots.

The ſecond Body.

Mary Piſanne, aged 30 Years, of a ſanguine Habit, had a *Bubo* under her right Arm-pit, with a *Delirium* that was followed by a mortal Sleepineſs. In the opening of her Body, we remark'd, that the Lungs were in their natural State. The Heart was of a prodigious bigneſs, full of black coagulated Blood, with the left Auricle livid and gangrenous. The Liver, which was much enlarged, was all cover'd with Purple;

ple; and the Gall Bladder fill'd with a black and greeniſh Bile. The Head was not open'd.

The third Body.

Peter Moulard, of a tender, feeble Conſtitution, about 14 Years of Age, had a *Bubo* under the hollow of the right Groin very deep, and that never came well out. He became delirous with Convulſions, in which this Child dy'd. We found in his Body his Heart of double the bigneſs that it ought naturally to be, containing a black thick Blood: His Lungs were beſprinkled with livid Spots. The Gall Bladder full of a black and greeniſh Bile. The Head was not open'd.

The fourth Body.

Jean Raynaud, Cook, aged about 25 Years, of a melancholy Temperament, had the whole Habit of his Body cover'd with a purple livid Colour, and a *Bubo* under his left *Axilla*; he dy'd in a delirous Phrenzy. We found in his Carcaſs two Abſceſſes, one between the Teguments and the left great pectoral Muſcle, and the other in the Breaſt between the *Sternum* and the *Mediaſtinum*. His Heart was very large, fill'd with black thick Blood. The right Auricle was of the Breadth of three Inches; the left was in its natural State. His Lungs were cover'd with little livid Spots, remaining ſoft and pliant, without any hardneſs in the Subſtance of them. The Liver was larger and harder than ordinary, and was alſo full of livid purple Spots; and the like were found in the Subſtance of his Brain, of which all the Veſſels were fill'd with black thick Blood.

The

The fifth Body.

Jaques Audibert, aged about 35, of a melancholy Complexion, four Months after he had been cured of the Plague, the Mark of which was a *Bubo* in the fold of the right Groin, which came well to a Suppuration, was attack'd afreſh with three Carbuncles; one in the middle of the Arm, and the other two in the fore Arm. He had but little Fever, with ſome ſmall Sickneſs at Stomach; but a *Delirium* coming of a ſudden, carried him off. Upon opening his Body, we found his Heart of a prodigious Bigneſs. The right Auricle being of the breadth of five Inches; and the left of three. We found a little Impoſtume upon the Body of the *Aorta*. The Lungs were cover'd with livid Spots, and the Liver appear'd gangrenous. The Gall Bladder was of a very black Colour. The *Duodenum* and the *Rectum* were inflam'd. We did not open the Head.

The ſixth Body.

Venture Cajole, about 40 Years of Age, of a melancholy Temperament, dy'd without any outward Eruption on the third Day, of a violent Fever, with a Sleepineſs. We found in the Body the *Mediaſtinum* torn towards the uppet part. The *Pericardium* was of a livid Colour. The Heart larger than in its natural State, by the ſwelling of its Ventricles full of black thick Blood, as in the other Carcaſſes. The Liver alſo was very large, and of a livid Colour, with a Carbuncular Puſtule on the ſide of the Gall Bladder; this was fill'd with very black Bile.

The

The ſeventh Body.

Margueritte Bachaire, aged 18 Years, of a lively vigorous Conſtitution, having two Carbuncular Puſtules on the middle and inſide of the Thigh, with a ſharp Pain in the Head, dy'd delirous. We found in her Body the Coverings of the Brain of a blackiſh red; The Cortical part of a livid Colour, and the Medullary ſprinkled with a few black Spots; The Heart of a prodigious Size, full of a thick black Blood: The Liver alſo very large, and the Gall Bladder very full of a black and green Bile. There were ſeveral livid Spots upon the Surface of the Inteſtines.

The eighth Body.

Louiſe Belingere, 20 Years of Age, having a *Bubo* in each fold of the Groin, died very ſuddenly without any dangerous Symptoms. We found in her Carcaſs the Heart all cover'd with a livid Purple, much larger than natural, fill'd with thick black Blood, having a *Polypus* in each Ventricle. The Lungs were in their natural State. The Liver of a prodigious Greatneſs; and the Gall Bladder full of Bile, of a deep green Colour.

The ninth Body.

One nam'd *Rampeau*, a Peaſant, aged about 20 Years, of a ſanguine robuſt Conſtitution, having had a Carbuncular Parotide for the Space of eight Days, accompany'd with a burning Fever, was carried to the Hoſpital the 2d of *May*, where he dy'd the 5th. We found the outward part of the left ſide of the Lungs cover'd with

with a livid Purple. The Heart was of double the natural Bigneſs, having ſcarce any Blood in the Ventricles, whoſe Cavities were fill'd each with a large *Polypus*, that on the right ſide having dilated the Auricle to the breadth of four Inches. The Liver alſo was larger than ordinary, and the Gall Bladder was full of a black and green Bile.

The Experiments, and the opening of the Bodies mentioned above, were made in the Hoſpital at the *Mall*, and in the Apothecary's Shop of the Reverend the Reformed Fathers of *Marſeilles*, during the Months of *February*, *March*, *April*, *May*, in Company of Meſſ. *Roberts* and *Ribeaud*, Doctors of Phyſick.

The following Experiments were made at Montpelier, *in the Hoſpital of St.* Eloy, *during the Months of* September, October, *and* November, *in company with Monſ.* Fizes, *Dr. of Phyſick, and Profeſſor of the Mathematicks, and Meſſieurs* Duli *and* Morel, *young Surgeons of the ſaid Hoſpital.*

A Soldier, between the Age of 20 and 25, of a lively brisk Temper, being ſick in the Hoſpital of St. *Eloy* of an ordinary malignant Fever, died about the 15th Day by a Defluxion upon his Breaſt. His Lungs were found very much blown up, filling all the Cavity of the Breaſt, and adhering to the *Pleura*. Having remark'd that the Bile in the Gall-Bladder was of a bright Graſs green Colour, we gather'd it for the following Experiments.

This

This Bile, being mingled with four Ounces of warm Water, was part injected into the Jugular Vein of a Dog, and a Compreſs ſoak'd in the reſt of the Liquor was applied to the reſt of the Wound. The Creature thereupon appear'd heavy and ſleepy, and would neither eat nor drink; the third Day he eat and drank willingly. The Compreſs falling off the fourth Day, the Wound was diminiſhed one half, and was healed by little and little, and the Dog grew perfectly well.

The eighth Experiment.

A Peaſant of about 50 or 60 Years old, of a melancholy Temperament, had been near a Month in the Hoſpital with an ordinary malignant Fever, having alternatively a *Delirium* and a Sleepineſs. After his Death, the Bile was found extreme thick, and black as Ink, and a great deal of it. We put about a Drachm in a Wound made for that purpoſe on the outer part of the right Thigh of a Dog, thruſting in Pledgets dipt in the ſaid Bile diluted, into the Wound. There did not appear any Change in the Dog. We made him ſwallow ſome of the ſame Bile, without loſing his Appetite; and ſeeing he was like to do well, we left the Wound to it ſelf, which heal'd in fifteen Days only by the Dog's licking it.

The ninth Experiment.

Being willing to inject ſome of the ſame Bile into the Crural Vein of another Dog, and the Syringe being ſtopt by the too great Thickneſs of the ſaid Bile, the Injection could not be made; wherefore we took a Pledget ſoak'd in as much of this Bile diluted, as it

could take up, and apply'd it to a freſh Wound made in the inſide of the right Thigh. The Pledget was faſten'd within the Skin by ſome Needles. This Application produced no conſiderable Alteration in the Dog; he neither appear'd ſleepy nor ſtomachleſs; but lick'd his Sore readily enough; and after the Pledget was fallen off, the Wound heal'd as in the foregoing Experiment.

The tenth Experiment.

About a Drachm of the ſame black Bile drawn from the ſame Carcaſs, and mixed with warm Water, was injected into the Jugular Vein of another Dog. The Creature was not incommoded thereby, but was as brisk as before the Injection, only he appear'd very thirſty and he drank with Greedineſs. The next Morning being willing to view the Wound, we found it black and dry, and the Dog becoming ſurly, bit one of the Aſſiſtants. The two Ligatures made for the Injection were taken away without our ſeeing any Blood to run out. We apply'd a Doſſil, charged with the ordinary Digeſtive, and kept on by a Bandage; and about four Hours after the Dreſſing, we found the Dog dead, having lived 23 Hours after the Injection. Having opened him, we found that his Heart beat ſtill with Violence, and the beating ceaſing, there was no Blood either in the Ventricles or the Auricles. This Liquor crowded together in the great Veſſels, appear'd of a lively red, and very fluid, without any of thoſe Concretions that we conſtantly obſerved in all the Bodies that dy'd of the Plague. Here appeared neither internal nor external Marks of the Plague.

The

The eleventh Experiment.

An Inhabitant of *Montpellier*, aged about 30 or 35, very fat and robuſt, of a ſanguine Complexion, having had a Fall upon the Pavement, had received a ſimple Wound on the upper part of his Forehead on the right ſide. This being neglected, brought on an *Eryſipelas* all over his Face, which was accompany'd with a Swelling of the left *Parotide*. This appear'd and diſappear'd thrice from Morning till Night. The *Eryſipelas* came ſuddenly on; he grew delirous, and died after fifteen or twenty Days Illneſs, reckoning from the Fall. In the opening of the Body, we found a quantity of Water between the Skull and the *Dura Mater*. The Brain, which was firmer than ordinary, was a little red, and part of the *Pia Mater* covering the hinder part of that *Viſcus*, appeared inflam'd. There was about half a Septier of Water of a yellowiſh Colour, ſhed in the Cavity of the Breaſt. The great right Lobe of the Lungs was a little hard on the upper part. The Heart had a Polypoſe Concretion in each Ventricle: We found likewiſe two Pints of limpid Water got forth into the lower Belly. All the Fat of his Carcaſs was yellow. The Liver appeared to us a little ſwell'd; and the Gall Bladder almoſt empty, not having above two Drachms of yellow Bile in it. That Bile of this Carcaſs, mixed with two Ounces of warm Water, was injected into the Crural Vein of a Dog. The Creature eat and drank heartily after the Injection, and did not appear at all incommoded. The Wound bleeding much, we were obliged to fill it with reſtringent Powders, kept in by a Pledget and a convenient Bandage. Twenty four Hours after, the Dreſſing was taken away, the

Wound appeared black and dry. The Dog licking it, it ſuppurated the next Day, and afterwards became red and well colour'd; and the Wound was leſſen'd one half in eight Days, during which time, the Dog appeared in perfect Health.

The twelfth Experiment.

Eight Days after the foregoing Experiment, the Dog, that was the Subject of it, was kill'd by about half a Drachm of Powder of *Hungarian Vitriol*, diſſolved in a ſpoonful of warm Water, which we injected into the Jugular Vein. The Creature dy'd on the ſpot, with univerſal Convulſions. His Heart was found full of grumous Blood reduced to a kind of thick Pap, but without any Clods. The Bile of this Dog was yellow and in little quantity. Not being able to inject it into the Crural Vein of another Dog, becauſe the Vein was too ſmall, we contented our ſelves to dip two Compreſſes in this Bile, which we apply'd and kept under his Skin, by two Wounds made on purpoſe in this ſecond Dog: There arriv'd no notable Change. We obſerved in theſe two Dogs no Marks either internal, or external, of the Plague.

Done at Montpelier *the 4th of* December, 1721.